

CLAIMS

What is claimed is:

1. An imageable element comprising:

a substrate; and

5 a layer of an imageable composition over the substrate;

in which:

the imageable composition comprises:

a photothermal conversion material, and

particles of a polyurethane polymer;

10 the polyurethane polymer comprises urethane linkages in the main chain;
and

the polyurethane polymer does not comprise side chain urethane groups.

2. The element of claim 1 in which the polyurethane polymer is
prepared by reaction of a diisocyanate and a dihydroxy compound, and the
15 dihydroxy compound comprises about 1-25% of a carboxy functional diol or a
mixture of carboxy functional diols.

3. The element of claim 2 in which the dihydroxy compound
comprises about 3-15% of a carboxy functional diol or mixture of carboxy
functional diols, about 0-50% of an aromatic diol or mixture of aromatic diols, and
20 about 35-97% of an aliphatic diol or mixture of aliphatic diols.

4. The element of claim 1 in which the polyurethane polymer
comprises blocking groups.

5. The element of claim 1 in which the polyurethane polymer does not
comprise blocking groups.

25 6. The element of claim 1 in which the imageable layer comprises,
based on the dry weight of the imageable layer: about 80% to about 99% of the
polyurethane particles, based on the dry weight of the particles; about 0.01% to

about 5% of a surfactant or mixture of surfactants; and about 0.5% to about 20% of the infrared absorber or mixture of infrared absorbers.

7. The element of claim 6 in which the dihydroxy compound comprises about 3-15% of a carboxy functional diol or mixture of carboxy functional diols, about 0-50% of an aromatic diol or mixture of aromatic diols, and about 35-97% of an aliphatic diol or mixture of aliphatic diols.

8. The element of claim 7 in which the imageable layer comprises: about 85% to about 95% of the polyurethane particles, based on the dry weight of the particles; about 0.1% to about 1% of the surfactant or mixture of surfactants; and about 1% to about 15% of the infrared absorber or mixture of infrared absorbers; and the polyurethane particles have a diameter of 0.01-0.5 micrometers.

9. The element of claim 1 in which the imageable layer additionally comprises a water soluble polymer or a mixture of water soluble polymers.

10. The element of claim 9 in which the imageable layer comprises: about 60% to about 95% of the polyurethane particles, based on the dry weight of the particles; about 0.01% to about 5% of a surfactant or mixture of surfactants; about 0.5% to 20% of the infrared absorber or mixture of infrared absorbers; and about 3% to 30% of the water soluble polymer or mixture of water soluble polymers.

11. The element of claim 10 in which the dihydroxy compound comprises about 3-15% of a carboxy functional diol or mixture of carboxy functional diols, about 0-50% of an aromatic diol or mixture of aromatic diols, and about 35-97% of an aliphatic diol or mixture of aliphatic diols.

12. The element of claim 11 in which the imageable layer comprises, based on the dry weight of the imageable layer: about 70% to about 90% of the polyurethane particles, based on the dry weight of the particles; about 0.1% to about 1% of the surfactant or mixture of surfactants; about 1% to about 15% of the infrared absorber or mixture of infrared absorbers; and about 5% to about

20% of the water soluble polymer or mixture of water soluble polymers; and the polyurethane particles have a diameter of 0.01-0.5 micrometers.

13. The element of claim 1 in which at least one end of the polyurethane polymer is either a blocking group or an amine group.

5 14. The element of claim 1 in which both ends of the polyurethane polymer are each either a blocking group or an amine group.

15. The element of claim 14 in which the polyurethane polymer is prepared by reaction of a diisocyanate and a dihydroxy compound, and the dihydroxy compound comprises about 1-25% of a carboxy functional diol or a
10 mixture of carboxy functional diols.

16. The element of claim 15 in which the dihydroxy compound comprises about 3-15% of a carboxy functional diol or mixture of carboxy functional diols, about 0-50% of an aromatic diol or mixture of aromatic diols, and about 35-97% of an aliphatic diol or mixture of aliphatic diols.

15 17. The element of claim 16 in which the imageable layer additionally comprises a water soluble polymer or a mixture of water soluble polymers.

18. The element of claim 1 in which the polyurethane polymer is not crosslinked.

19. The element of claim 18 in which the imageable layer additionally
20 comprises a water soluble polymer or a mixture of water soluble polymers.

20. A method for forming an image, the method comprising the steps of:

(a) thermally imaging an imageable element to produce an imaged imageable element comprising imaged regions and unimaged regions in the
25 layer of imageable composition, the imageable element comprising:

a substrate; and

a layer of an imageable composition over the substrate;

in which:

the imageable composition comprises:

a photothermal conversion material, and

particles of a polyurethane polymer;

the polyurethane polymer comprises urethane linkages in the main chain;

5 and

the polyurethane polymer does not comprise side chain urethane groups;

(b) developing the imaged imageable element by applying fountain solution and lithographic ink to the layer of imageable composition, removing the unimaged regions, and forming the image.

10 21. The method of claim 20 in which the polyurethane polymer is prepared by reaction of a diisocyanate and a dihydroxy compound, and the dihydroxy compound comprises about 1-25% of a carboxy functional diol or a mixture of carboxy functional diols.

15 22. The method of claim 21 in which the dihydroxy compound comprises about 3-15% of a carboxy functional diol or mixture of carboxy functional diols, about 0-50% of an aromatic diol or mixture of aromatic diols, and about 35-97% of an aliphatic diol or a mixture of aliphatic diols.

23. The method of claim 20 in which the polyurethane polymer comprises blocking groups.

20 24. The method of claim 20 in which the polyurethane polymer does not comprise blocking groups.

25 25. The method of claim 20 in which the imageable layer comprises, based on the dry weight of the imageable layer: about 80% to about 99% of the polyurethane particles, based on the dry weight of the particles; about 0.01% to about 5% of a surfactant or mixture of surfactants; and about 0.5% to about 20% of the infrared absorber or mixture of infrared absorbers.

26. The method of claim 25 in which the dihydroxy compound comprises about 3-15% of a carboxy functional diol or mixture of carboxy

functional diols, about 0-50% of an aromatic diol or mixture of aromatic diols, and about 35-97% of an aliphatic diol or a mixture of aliphatic diols.

27. The method of claim 26 in which the imageable layer comprises:
about 85% to about 95% of the polyurethane particles, based on the dry weight
5 of the particles; about 0.1% to about 1% of the surfactant or mixture of
surfactants; and about 1% to about 15% of the infrared absorber or mixture of
infrared absorbers; and the polyurethane particles have a diameter of 0.01-0.5
micrometers.

28. The method of claim 20 in which the imageable layer additionally
10 comprises a water soluble polymer or a mixture of water soluble polymers.

29. The method of claim 28 in which the imageable layer comprises:
about 60% to about 95% of the polyurethane particles, based on the dry weight
of the particles; about 0.01% to about 5% of a surfactant of mixture of
surfactants; about 0.5% to 20% of the infrared absorber or mixture of infrared
15 absorbers; and about 3% to 30% of the water soluble polymer or mixture of water
soluble polymers.

30. The method of claim 29 in which the dihydroxy compound
comprises about 3-15% of a carboxy functional diol or mixture of carboxy
functional diols, about 0-50% of an aromatic diol or mixture of aromatic diols, and
20 about 35-97% of an aliphatic diol or mixture of aliphatic diols.

31. The method of claim 30 in which the imageable layer comprises,
based on the dry weight of the imageable layer: about 70% to about 90% of the
polyurethane particles, based on the dry weight of the particles; about 0.1% to
about 1% of the surfactant of mixture of surfactants; about 1% to about 15% of
25 the infrared absorber or mixture of infrared absorbers; and about 5% to about
20% of the water soluble polymer or mixture of water soluble polymers; and the
polyurethane particles have a diameter of 0.01-0.5 micrometers.

32. The method of claim 31 additionally comprising, after step (b),
(c) applying a fountain solution and then a lithographic ink to the

image, forming an ink image, and transferring the ink image to a receiver.

33. The method of claim 20 in which both ends of the polyurethane polymer are each either a blocking group or an amine group.

34. The method of claim 20 in which the polyurethane polymer is not
5 crosslinked.

35. The method of claim 34 in which the imageable layer additionally comprises a water soluble polymer or a mixture of water soluble polymers.